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EXAMINER

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## **DETAILED ACTION**

### ***Acknowledgements***

The amendment filed on 09 November 2007 in response to the Office Action mailed on 09 August 2007 has been entered. The present Office Action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office Action are claims 1-16.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 8-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohki et al. (US 5,886,408) in view of Juskey et al. (US 5,371,404).

With respect to claim 1, Ohki et al. (Figs. 2A-3) discloses an electronic power module, comprising: a first [9] and a second [5] cooling device; a semiconductor device [3], arranged between the first and the second cooling device; an elastic annular element [7] having a space [13] in which the semiconductor device is located such that the elastic annular element is arranged around the semiconductor device, the space within the elastic annular element being encapsulated and being partially bounded by the first and second cooling devices [Abstract, column 3 lines 57-59, column 20 lines 15-20]. Ohki does not specify the space within the elastic annular element is being cast.

However, Juskey et al. (Figs. 3-4) discloses it is well known for a space [between 29 and 10] to be cast. Juskey et al. teaches the benefits of a space being cast in order to provide a good thermal path to dissipate heat from the integrated circuit [column 4 lines 38-47]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the space within the elastic annular element of Ohki et al. to be cast, such as taught by Juskey et al., in order to provide a good thermal path to dissipate heat from the integrated circuit.

With respect to claim 2, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 1. Ohki et al. (Figs. 2A-3) discloses the first and second cooling devices each include at least one heat sink [9, 12, Abstract, column 3 lines 57-59, column 20 lines 15-20].

With respect to claim 3 Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 1. Ohki et al. (Figs. 2A-3) further discloses at least the first cooling device include a metal rail [9A] for directly transporting heat away from the semiconductor device and for making electrical contact with the semiconductor device.

With respect to claim 4, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 3. Ohki et al. (Figs. 2A-3) further discloses the respective metal rail and the at least one heat sink are integral.

With respect to claim 8, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 1. Ohki et al. [column 8 lines 59-60] further discloses the annular element is composed of rubber.

With respect to claim 9, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 1. Ohki et al. (Figs. 2A, 2B, 3) further discloses the annular element is of a size which is substantially constant in the axial direction, so that a prespecified air gap [24, 25] and creepage distance are ensured between the first and second cooling devices.

With respect to claim 10, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 1. Ohki et al. (Figs. 2A-3) further discloses the annular element includes an opening [13]. Ohki et al. does not specify an encapsulation compound is introduced in the opening. However, Juskey et al. (Figs. 3-4) discloses it is well known to introduce an encapsulation compound [20, 25] in an opening [between 29 and 10]. Juskey et al. teaches the benefits of introducing an encapsulation compound in an opening in order to provide a good thermal path to dissipate heat from the integrated circuit [column 4 lines 38-47]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the opening within the elastic annular element of Ohki et al. in view of Juskey et al. to have an encapsulation compound introduced, such as taught by Juskey et al., in order to provide a good thermal path to dissipate heat from the integrated circuit.

With respect to claim 14, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 2. Ohki et al. (Figs. 2A-3) further discloses

at least the first cooling device include a metal rail [9A] for directly transporting heat away from the semiconductor device and for making electrical contact with the semiconductor device.

Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohki et al. in view of Juskey et al. as applied to claims 3 and 4 above, and further in view of Palanisamy (US 2004/0016568 A1).

With respect to claim 5, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 3. Ohki et al. (Figs. 2A-3) discloses the at least one heat sink is composed of at least aluminum [column 8 lines 33-49]. Ohki et al. does not specify the respective metal rail is composed of at least one of copper and aluminum. However, Palanisamy (Fig. 3A) discloses it is well known for a metal rail [108] in a ceramic board [300] to be composed of copper. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the metal rail of Ohki et al. in view of Juskey et al. to be composed of copper, such as taught by Palanisamy, because of copper's characteristic of excellent conductivity.

With respect to claim 15, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 4. Ohki et al. (Figs. 2A-3) discloses the at least one heat sink is composed of at least aluminum [column 8 lines 33-49]. Ohki et al. does not specify the respective metal rail is composed of at least one of copper and aluminum. However, Palanisamy (Fig. 3A) discloses it is well known for a metal rail [108] in a ceramic board [300] to be composed of copper. Therefore, it would have

been obvious to one of ordinary skill in the art at the time the invention was made for the metal rail of Ohki et al. in view of Juskey et al. to be composed of copper, such as taught by Palanisamy, because of copper's characteristic of excellent conductivity.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohki et al. in view of Juskey et al. as applied to claim 1 above, and further in view of Ohkouchi (US 2003/0090873 A1).

With respect to claim 6, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 4. Ohki et al. (Figs. 2A-3) further discloses the semiconductor device includes two semiconductor elements [3]. Ohki et al. in view of Juskey et al. does not specify the two semiconductor elements are electrically connected back-to-back in parallel. However, Ohkouchi (Fig. 1) discloses it is well known for two semiconductor elements [101a, 101b] to be electrically connected back-to-back in parallel [paragraphs 0083, 0243]. Ohkouchi teaches the benefits of two semiconductor devices to be electrically connected back-to-back in parallel so that the device may efficiently dissipate heat from the semiconductor elements [paragraph 0247].

With respect to claim 7, Ohki et al. in view of Juskey et al. discloses the electronic power module as claimed in claim 6. Ohki et al. (Figs. 2A-3) further discloses the semiconductor elements are in the form of semiconductor cells without a housing [column 8 lines 9-11].

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohki et al. in view of Juskey et al. as applied to claim 1 above, and further in view of Ohkouchi.

With respect to claim 13, Ohki et al. in view of Juskey et al. discloses the electronic power module of claim 1. Ohki et al. in view of Juskey et al. does not specify the electronic power module is for an electronic motor controller for a soft-starting motor. However, Ohkouchi discloses it is well known for an electronic power module to be used as an electronic motor controller for a soft-starting motor [paragraphs 0095 and 0281]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the electronic power module of Ohki et al. in view of Juskey et al. to be used as an electronic motor controller for a soft-starting motor, such as taught by Ohkouchi, in order to improve heat radiating efficiency [Ohki et al., column 2 lines 39-42].

### ***Response to Arguments***

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Telephone/Fax Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie P. Cruz whose telephone number is (571)272-8599. The examiner can normally be reached on Monday-Friday 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue A. Purvis can be reached on 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2826

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